

# IMAGE DISPLAY METHOD AND DEVICE

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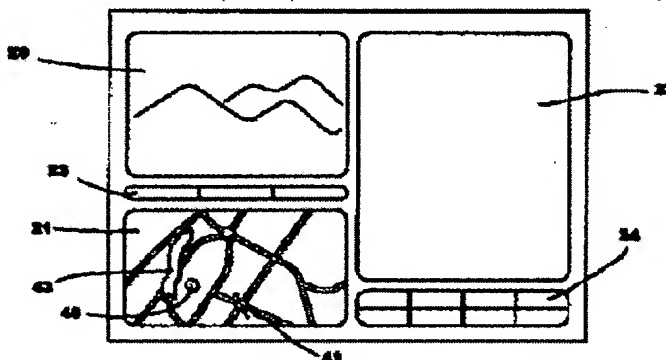
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## Abstract of JP2001215941

**PROBLEM TO BE SOLVED:** To provide a display means which has more realistic sensation and enables an operator to control a position, a direction and time integrally as to the display method and device of image information such as panoramic picture, animation corresponding to a specific place and a movement locus. **SOLUTION:** When the place sign provided with a direction indication element is displayed on the area picture displayed on a display screen and direction instruction information of the pertinent place are inputted to this device, the direction indication element is directed toward the instructed direction and, also, the image part of the instructed direction is cut out from the image information corresponding to the pertinent place on the area picture to be displayed on one of displays. Moreover, as to the animation, when a locus sign indicating a movement route is displayed on the area picture and coordinates on the locus sign are inputted, animation information cut out from animation information expressing the change of sight at the time when a viewpoint is moved along the locus in a partial time made to correspond to the coordinates are displayed on another display of the device.



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**CLAIMS**

[Claim(s)]

[Claim 1]When a point sign provided with a direction instruction element on local drawing displayed on a display screen is displayed and direction designating information of the point concerned is inputted, turn said direction instruction element in the specification direction, and. The method of presentation of a picture starting and displaying an image region of said specification direction from picture information corresponding to the point concerned on local drawing.

[Claim 2]An image display device comprising:

A graphics file which recorded picture information of a specific point.

A display provided with an image display division and a local drawing section display.

An image display means which displays picture information on said image display division.

A local drawing displaying means which displays \*\*\*\* information on said local drawing section display, and a point symbol display means provided with a direction instruction element which is associated and is displayed on a specific point of local drawing information, An acquisition means of direction information on point coordinates on a local drawing section display, and the coordinates concerned, A file selection means to choose a graphics file related with the specific point concerned when acquired point coordinates correspond to coordinates of said specific point, and a display information output means which sends out partial information in a graphics file corresponding to acquired direction information to an image display means.

[Claim 3]When a locus sign which shows moving trucking is displayed on local drawing displayed on a display screen and coordinates on the locus sign concerned are inputted, The method of presentation of a picture displaying moving image information cut out from moving image information which shows change of a scene when moving a viewpoint along with the locus concerned by time of onset made to correspond to said coordinates, and end time.

[Claim 4]An image display device comprising:

A dynamic image file which recorded moving image information accompanied by movement of a viewpoint.

A display provided with an image display division and a local drawing section display.

An image display means which displays moving image information on said image display division.

A local drawing displaying means which displays local drawing information on said local drawing section display, and a locus displaying means which displays a locus in alignment with a course of said movement on local drawing information, An acquisition means of point coordinates on a local drawing section display, and a file selection means to choose a dynamic image file related with the locus concerned when acquired point coordinates are on said locus, A display information output means which sends out partial information in a dynamic image file corresponding to a position on said locus of acquired point coordinates to an image display means.

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**TECHNICAL FIELD**

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[Field of the Invention]In this invention, it is related with the method of presentation and the device of picture information corresponding to the specific point thru/or moving track of the area.

Therefore, an omnidirection picture [ in / the specific point of a tourist resort, a golf course, the descent course of skiing, etc. / for example ] (panorama drawing), It is related with the method and device which display pictures, such as an omnidirection picture (panorama animation) which changes with the picture (animation) and movement which change with movement, on a display screen.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]In this invention, it is related with the method of presentation and the device of picture information corresponding to the specific point thru/or moving track of the area.

Therefore, an omnidirection picture [ in / the specific point of a tourist resort, a golf course, the descent course of skiing, etc. / for example ] (panorama drawing), It is related with the method and device which display pictures, such as an omnidirection picture (panorama animation) which changes with the picture (animation) and movement which change with movement, on a display screen.

[0002]

[Description of the Prior Art]Display local drawings, such as a map and a bird's-eye view, on a display screen, and a point sign is displayed on the position corresponding to the specific point on this local drawing appointed beforehand in piles, When the point sign is pointed at by light pen, a mouse cursor, etc., the image display method and device which display the picture which shows the scene of the point concerned on a display screen are publicly known.

[0003]The signal sent from two or more cameras formed in the area which is installed in the information desk of a tourist resort, or the management office of institutions, and corresponds, The method and device which choose by pointing at the point sign which shows the installed position of the camera on the area map displayed on the display screen, and display the picture of the selected camera concerned on a display screen are also publicly known.

[0004]

[Problem(s) to be Solved by the Invention]The above conventional image display means have the feature that an operator can choose the landscape information of two or more points, etc. freely, and can display them. However, this conventional seed means is the two-dimensional picture beforehand prepared for every point, and there is little amount of information compared with the actual scene which is four-dimensional space including a time-axis, and it lacks also in presence. It is being fixed beforehand what kind of picture an operator displays at the point which can only choose the specific point on local drawing, and was chosen.

[0005]This invention is more full of presence, and provides the displaying means which made controllable the position, the direction, and time whose operator is an element of real space integrative. That is, it is making to enable the display of the scene and other pictures on the specific point on local drawing, or moving trucking in a near form according to a state when it is actually in the point into the technical problem.

[0006]

[Means for Solving the Problem]When the method of presentation of a picture of an invention concerning claim 1 displays a point sign provided with a direction instruction element on local drawing displayed on a display screen and direction designating information of the point concerned is inputted, turn said direction instruction element in the specification direction, and. An image region of said specification direction is started and displayed from picture information corresponding to the point concerned on local drawing.

[0007]The method of presentation of a picture of an invention concerning claim 3, When a locus sign which shows moving trucking is displayed on local drawing displayed on a display screen and coordinates on the locus sign concerned are inputted, Moving image information cut out from moving image information which shows change of a scene when moving a viewpoint along with the locus concerned by time of onset made to correspond to said coordinates and end time is displayed.

[0008]An image display device concerning an invention of claim 2 for realizing a method of above-mentioned claim 1 is provided with the following.

A graphics file which recorded picture information of a specific point.

A display provided with an image display division and a local drawing section display.

An image display means which displays picture information (panorama drawing, an animation, a still picture, CG graphics, etc.) on said image display division.

A local drawing displaying means which displays local drawing information, including a map, a floor plan, a bird's-eye view, etc., on said local drawing section display, A point symbol display means provided with a direction instruction element which is associated and is displayed on a specific point of local drawing information, An acquisition means of direction information on point coordinates on a local drawing section display, and the coordinates concerned, A file selection means to choose a graphics file related with the specific point concerned when acquired point coordinates correspond to coordinates of said specific point, and a display information output means which sends out partial information in a graphics file corresponding to acquired direction information to an image display means.

[0009]An image display device concerning an invention of claim 4 for realizing a method of above-mentioned claim 3 is provided with the following.

A dynamic image file which recorded moving image information accompanied by movement of a viewpoint.

A display provided with an image display division and a local drawing section display.

An image display means which displays moving image information (a panorama animation, an animation, CG animation, etc.) on said image display division.

A local drawing displaying means which displays local drawing information, including a map, a floor plan, a bird's-eye view, etc., on said local drawing section display, A locus displaying means which displays a locus in alignment with a course of said movement on local drawing information, An acquisition means of point coordinates on a local drawing section display, and a file selection means to choose a dynamic image file related with the locus concerned when acquired point coordinates are on said locus, A display information output means which sends out partial information in a dynamic image file corresponding to a position on said locus of acquired point coordinates to an image display means.

[0010]By performing simultaneously a method of above-mentioned claim 1, and a method of claim 3, a picture of the specific direction of a panorama animation can be displayed temporally. A described method and a device are also realizable by a system by which realizing by computer of a stand-alone also connected a display terminal and a server by the Internet, LAN, etc. When renewal of that data volume of image data will become huge if it is going to enable a display of many information, and data is taken into consideration, composition of image data which is stored in two or more servers and connected with a display terminal in a network is more preferred.

[0011]

[Embodiment of the Invention]Hereafter, this embodiment of the invention is described with reference to drawings. The device of the graphic display example comprises the display terminal 1, the retrieving database (server of retrieved data) 2, and the image database (server of image data) 3. The display terminal 1 and two kinds of databases 2 and 3 constitute the network using the Internet, and two or more image databases 3 and display terminals 1 exist.

[0012]Drawing 2 is what showed an example of the hardware constitutions of the display terminal 1, and is provided with CPU10, display 11, memory 12, keyboard 13, mouse 14, CD-ROM15, loudspeaker 16, network interface 17, and HDD18, Processing programs, such as a network connection program, a browser, a panorama drawing processing program, and an animation processing program, are recorded on HDD18. The coordinate information on a display screen is inputted by the mouse 14.

[0013]As shown in drawing 3, the display screen of the display terminal 1 is divided in the image display division 20, the area-map section display 21, and the text information section display 22, and is provided with the viewing area of the control 23 and 24 for performing selection of information, and the change of a display.

[0014]A browser displays local drawings acquired from the image database 3 using the information received from the retrieving database 2, such as a map, a floor plan, and a bird's-eye view, on the local drawing section display 21, and displays the point sign 40 which equipped with the direction instruction element 41 the position on the local drawing section display specified as a picture camera station. Corresponding to the camera station information on an animation, the locus based on animation track information is displayed on a local drawing section display. A browser displays picture information, such as panorama drawing started by the logging program which is received from the image database 3 and mentioned later, an animation, a still picture, and CG graphics, on the image display division 20, displays text information on a text display division, and reproduces sound data.

[0015]When the point coordinates on the acquired local drawing section display correspond to the display position of a point sign, a panorama drawing processing program, The point ID transmission program which transmits point ID of the point concerned to the retrieving database 2, and the logging program which cuts down the part image corresponding to the direction information acquired from the specified graphics file, and is sent out to a browser are included.

[0016]When an animation processing program is on the locus as which the acquired point coordinates were displayed, The transmission program which transmits locus ID of the locus concerned to the retrieving database 2, and the logging program which starts the reproducing section of the animation corresponding to the position of the acquired point coordinates based on the data of a moving-image-reproduction base period, and is sent out

to a browser are included.

[0017] Since the hardware constitutions of the retrieving database 2 and the image database 3 are almost the same as the thing of a display terminal fundamentally, they give the same numerals as drawing 2 to drawing 4 and drawing 5, and omit explanation.

[0018] A network connection program, the transmission program of table data, the renewal program of a table, the list table, the retrieving table, etc. are recorded on HDD18 of the retrieving database 2. The item of a retrieving table, for example Screen ID, a network domain name, They are the panorama drawing camera station information corresponding to two or more points displayed on a screen title name, local picture information, and a local drawing section display thru/or point ID of a locus, and every place point ID, point symbol display position information, turn signal reference position information, animation photography track information, a moving-image-reproduction base period, etc.

[0019] Corresponding to each of two or more point ID, the dynamic image file name, the panoramic image file name, the text information file name, and the sound data file name are registered into the retrieving database.

[0020] The retrieving database 2 sends a list table to the display terminal 1 as initial information, and the display terminal 1 displays a list table on a text display field. If one record in a list table is chosen by the display terminal side, as for a display terminal, screen ID of the record concerned will be sent to the retrieving database 2, and the retrieving database 2 will transmit the item information indicated on the selected record to the display terminal 1.

[0021] Two or more image databases 3 possess the network domain name by which each was registered into the retrieving database 2, and the dynamic image file of the name registered into the retrieving table, the panoramic image file, the text information file, and the sound data file are registered. The image database 3 besides a network connection program and a picture information transmission program, It has an update information transmission program, and when a new picture is added to the image database 3, it is changed or it is deleted, the item data corresponding to it is sent to the retrieving database 2, and the updating program of the retrieving database 2 updates the contents of the retrieving table.

[0022] The list table and retrieving table of the retrieving database 2 are possible also for providing by CD-ROM, and are read into a display terminal with CD-ROM drive 15 in this case. Logging of a panoramic image and moving-image-reproduction time can be performed by the image data side.

[0023] Drawing 7 shows notionally the direction information acquisition means with which the display terminal is provided, and, as for drawing 8, the part image \*\*\*\* means of a panoramic image is shown notionally. The point sign 40 which displays the specific point on an area map is provided with the direction instruction element 41. This direction instruction element calculates a direction from the display coordinates of a point sign, and the coordinates of the point 42, when the coordinates of the point 42 near the point sign 40 concerned are inputted, thru/or when the point sign concerned is dragged, and it changes that direction. From the acquired direction directions information, it \*\*\*\*, the partial information of the predetermined region which exists in the direction specified from the panoramic image data displayed now is amended, and a display terminal displays it on the image display division 20.

[0024] Drawing 8 and 9 are the key maps showing a relation with animation display time with the locus sign 43 displayed on the local drawing section display. If the coordinates of the point 44 on a locus are inputted, it will be computed which time position of a regeneration phase [ of an animation ] throughout the point on the locus is, and the moving-image-reproduction time 45 and the end time 46 will be set up with the time width before and behind the time position. And the set-up picture information within a time is displayed on the image display division 20.

[0025] Drawing 11 is the flow chart which showed the flow of the processing at the time of a panorama drawing display. A displaying condition is held when the operator does not specify the display point. If the point is specified, an angle will be computed from the display coordinates R1 and the point coordinates R2 of a positional notation, and the picture to display will be updated. And with reference to the direction information file which recorded the direction of the picture to display, the display information of a text, and a relation with sound data, if required, an indicative data will be updated.

[0026] Drawing 12 is a flow chart which shows processing when displaying an animation. If an animation is being reproduced while the operator is not pointing at the locus sign, the reproduction is continued, and a displaying condition will be held if it is not reproducing. While the animation is being reproduced, required display and change processing of a sound are performed with reference to the track information file which indicated the relation with the text data and sound data which are displayed as the regeneration time. When an operator points at a locus sign, regeneration time is changed, a track information file is seen, and renewal of text data and sound data is performed.

[0027] Next, overall operation of the device shown in the above-mentioned example is explained. The list table is displayed on the display terminal as an initial screen. If the name of a place and its easy guide sentence are displayed on a list table and an operator clicks the desired name of a place, the screen ID will be sent to a retrieving database, and a retrieving database will send the item of the record corresponding to the screen ID to

a display terminal. Since local drawing information, the filming site dot data on local drawing, reference-direction information, and photography track information are included, based on these information, local drawing is displayed on the local drawing section display of a display, and also a point sign and a locus sign are displayed on the sent item by a pile.

[0028]If the point on the point sign which an operator wants to display, or a locus sign is clicked, Point ID is acquired, based on a domain name, it connects with the image database corresponding to the screen ID, an image file name, a dynamic image file name, etc. are transmitted, and an image database sends the data of the specified picture to a display terminal. A display terminal starts the received picture in a reference direction, and displays it on an image display region.

[0029]In panorama drawing, if an operator changes the direction of the direction instruction element of a point sign, the logging position of a picture will be changed and the picture of the direction will be displayed. In an animation, when an operator clicks the point on a locus, the moving image information of the predetermined time before and behind that is started, and it displays on an image display division as an animation. And when alteration data is registered, text information and sound data are changed according to change of a screen.

[0030]As explained above, in the method and device of this invention. While the image is displayed by pointing at the specific point and specific locus which were displayed on local drawing, In this kind in which only the image an operator is able to choose the direction of a look and the regeneration time of an animation by an operator's operation, and conventionally two-dimensional was acquired of image display means, It is effective in the ability to show a picture as three dimensions thru/or fourth dimension information with spatial and time breadth.

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**PRIOR ART**

[Description of the Prior Art]Display local drawings, such as a map and a bird's-eye view, on a display screen, and a point sign is displayed on the position corresponding to the specific point on this local drawing appointed beforehand in piles, When the point sign is pointed at by light pen, a mouse cursor, etc., the image display method and device which display the picture which shows the scene of the point concerned on a display screen are publicly known.

[0003]The signal sent from two or more cameras formed in the area which is installed in the information desk of a tourist resort, or the management office of institutions, and corresponds, The method and device which choose by pointing at the point sign which shows the installed position of the camera on the area map displayed on the display screen, and display the picture of the selected camera concerned on a display screen are also publicly known.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention]The above conventional image display means have the feature that an operator can choose the landscape information of two or more points, etc. freely, and can display them. However, this conventional seed means is the two-dimensional picture beforehand prepared for every point, and there is little amount of information compared with the actual scene which is four-dimensional space including a time-axis, and it lacks also in presence. It is being fixed beforehand what kind of picture an operator displays at the point which can only choose the specific point on local drawing, and was chosen.

[0005]This invention is more full of presence, and provides the displaying means which made controllable the position, the direction, and time whose operator is an element of real space integrative. That is, it is making to enable the display of the scene and other pictures on the specific point on local drawing, or moving trucking in a near form according to a state when it is actually in the point into the technical problem.

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## MEANS

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[Means for Solving the Problem]When the method of presentation of a picture of an invention concerning claim 1 displays a point sign provided with a direction instruction element on local drawing displayed on a display screen and direction designating information of the point concerned is inputted, turn said direction instruction element in the specification direction, and. An image region of said specification direction is started and displayed from picture information corresponding to the point concerned on local drawing.

[0007]The method of presentation of a picture of an invention concerning claim 3, When a locus sign which shows moving trucking is displayed on local drawing displayed on a display screen and coordinates on the locus sign concerned are inputted, Moving image information cut out from moving image information which shows change of a scene when moving a viewpoint along with the locus concerned by time of onset made to correspond to said coordinates and end time is displayed.

[0008]An image display device concerning an invention of claim 2 for realizing a method of above-mentioned claim 1 is provided with the following.

A graphics file which recorded picture information of a specific point.

A display provided with an image display division and a local drawing section display.

An image display means which displays picture information (panorama drawing, an animation, a still picture, CG graphics, etc.) on said image display division.

A local drawing displaying means which displays local drawing information, including a map, a floor plan, a bird's-eye view, etc., on said local drawing section display, A point symbol display means provided with a direction instruction element which is associated and is displayed on a specific point of local drawing information, An acquisition means of direction information on point coordinates on a local drawing section display, and the coordinates concerned, A file selection means to choose a graphics file related with the specific point concerned when acquired point coordinates correspond to coordinates of said specific point, and a display information output means which sends out partial information in a graphics file corresponding to acquired direction information to an image display means.

[0009]An image display device concerning an invention of claim 4 for realizing a method of above-mentioned claim 3 is provided with the following.

A dynamic image file which recorded moving image information accompanied by movement of a viewpoint.

A display provided with an image display division and a local drawing section display.

An image display means which displays moving image information (a panorama animation, an animation, CG animation, etc.) on said image display division.

A local drawing displaying means which displays local drawing information, including a map, a floor plan, a bird's-eye view, etc., on said local drawing section display, A locus displaying means which displays a locus in alignment with a course of said movement on local drawing information, An acquisition means of point coordinates on a local drawing section display, and a file selection means to choose a dynamic image file related with the locus concerned when acquired point coordinates are on said locus, A display information output means which sends out partial information in a dynamic image file corresponding to a position on said locus of acquired point coordinates to an image display means.

[0010]By performing simultaneously a method of above-mentioned claim 1, and a method of claim 3, a picture of the specific direction of a panorama animation can be displayed temporally. A described method and a device are also realizable by a system by which realizing by computer of a stand-alone also connected a display terminal and a server by the Internet, LAN, etc. When renewal of that data volume of image data will become huge if it is going to enable a display of many information, and data is taken into consideration, composition of image data which is stored in two or more servers and connected with a display terminal in a network is more preferred.

[0011]

[Embodiment of the Invention]Hereafter, this embodiment of the invention is described with reference to drawings. The device of the graphic display example comprises the display terminal 1, the retrieving database

(server of retrieved data) 2, and the image database (server of image data) 3. The display terminal 1 and two kinds of databases 2 and 3 constitute the network using the Internet, and two or more image databases 3 and display terminals 1 exist.

[0012]Drawing 2 is what showed an example of the hardware constitutions of the display terminal 1, and is provided with CPU10, display 11, memory 12, keyboard 13, mouse 14, CD-ROM15, loudspeaker 16, network interface 17, and HDD18, Processing programs, such as a network connection program, a browser, a panorama drawing processing program, and an animation processing program, are recorded on HDD18. The coordinate information on a display screen is inputted by the mouse 14.

[0013]As shown in drawing 3, the display screen of the display terminal 1 is divided in the image display division 20, the area-map section display 21, and the text information section display 22, and is provided with the viewing area of the control 23 and 24 for performing selection of information, and the change of a display.

[0014]A browser displays local drawings acquired from the image database 3 using the information received from the retrieving database 2, such as a map, a floor plan, and a bird's-eye view, on the local drawing section display 21, and displays the point sign 40 which equipped with the direction instruction element 41 the position on the local drawing section display specified as a picture camera station. Corresponding to the camera station information on an animation, the locus based on animation track information is displayed on a local drawing section display. A browser displays picture information, such as panorama drawing started by the logging program which is received from the image database 3 and mentioned later, an animation, a still picture, and CG graphics, on the image display division 20, displays text information on a text display division, and reproduces sound data.

[0015]When the point coordinates on the acquired local drawing section display correspond to the display position of a point sign, a panorama drawing processing program, The point ID transmission program which transmits point ID of the point concerned to the retrieving database 2, and the logging program which cuts down the part image corresponding to the direction information acquired from the specified graphics file, and is sent out to a browser are included.

[0016]When an animation processing program is on the locus as which the acquired point coordinates were displayed, The transmission program which transmits locus ID of the locus concerned to the retrieving database 2, and the logging program which starts the reproducing section of the animation corresponding to the position of the acquired point coordinates based on the data of a moving-image-reproduction base period, and is sent out to a browser are included.

[0017]Since the hardware constitutions of the retrieving database 2 and the image database 3 are almost the same as the thing of a display terminal fundamentally, they give the same numerals as drawing 2 to drawing 4 and drawing 5, and omit explanation.

[0018]A network connection program, the transmission program of table data, the renewal program of a table, the list table, the retrieving table, etc. are recorded on HDD18 of the retrieving database 2. The item of a retrieving table, for example Screen ID, a network domain name, They are the panorama drawing camera station information corresponding to two or more points displayed on a screen title name, local picture information, and a local drawing section display thru/or point ID of a locus, and every place point ID, point symbol display position information, turn signal reference position information, animation photography track information, a moving-image-reproduction base period, etc.

[0019]Corresponding to each of two or more point ID, the dynamic image file name, the panoramic image file name, the text information file name, and the sound data file name are registered into the retrieving database.

[0020]The retrieving database 2 sends a list table to the display terminal 1 as initial information, and the display terminal 1 displays a list table on a text display field. If one record in a list table is chosen by the display terminal side, as for a display terminal, screen ID of the record concerned will be sent to the retrieving database 2, and the retrieving database 2 will transmit the item information indicated on the selected record to the display terminal 1.

[0021]Two or more image databases 3 possess the network domain name by which each was registered into the retrieving database 2, and the dynamic image file of the name registered into the retrieving table, the panoramic image file, the text information file, and the sound data file are registered. The image database 3 besides a network connection program and a picture information transmission program, It has an update information transmission program, and when a new picture is added to the image database 3, it is changed or it is deleted, the item data corresponding to it is sent to the retrieving database 2, and the updating program of the retrieving database 2 updates the contents of the retrieving table.

[0022]The list table and retrieving table of the retrieving database 2 are possible also for providing by CD-ROM, and are read into a display terminal with CD-ROM drive 15 in this case. Logging of a panoramic image and moving-image-reproduction time can be performed by the image data side.

[0023]Drawing 7 shows notionally the direction information acquisition means with which the display terminal is provided, and, as for drawing 8, the part image \*\*\*\* means of a panoramic image is shown notionally. The point sign 40 which displays the specific point on an area map is provided with the direction instruction element 41. This direction instruction element calculates a direction from the display coordinates of a point sign, and the

coordinates of the point 42, when the coordinates of the point 42 near the point sign 40 concerned are inputted, thru/or when the point sign concerned is dragged, and it changes that direction. From the acquired direction directions information, it \*\*\*\*, the partial information of the predetermined region which exists in the direction specified from the panoramic image data displayed now is amended, and a display terminal displays it on the image display division 20.

[0024]Drawing 8 and 9 are the key maps showing a relation with animation display time with the locus sign 43 displayed on the local drawing section display. If the coordinates of the point 44 on a locus are inputted, it will be computed which time position of a regeneration phase [ of an animation ] throughout the point on the locus is, and the moving-image-reproduction time 45 and the end time 46 will be set up with the time width before and behind the time position. And the set-up picture information within a time is displayed on the image display division 20.

[0025]Drawing 11 is the flow chart which showed the flow of the processing at the time of a panorama drawing display. A displaying condition is held when the operator does not specify the display point. If the point is specified, an angle will be computed from the display coordinates R1 and the point coordinates R2 of a positional notation, and the picture to display will be updated. And with reference to the direction information file which recorded the direction of the picture to display, the display information of a text, and a relation with sound data, if required, an indicative data will be updated.

[0026]Drawing 12 is a flow chart which shows processing when displaying an animation. If an animation is being reproduced while the operator is not pointing at the locus sign, the reproduction is continued, and a displaying condition will be held if it is not reproducing. While the animation is being reproduced, required display and change processing of a sound are performed with reference to the track information file which indicated the relation with the text data and sound data which are displayed as the regeneration time. When an operator points at a locus sign, regeneration time is changed, a track information file is seen, and renewal of text data and sound data is performed.

[0027]Next, overall operation of the device shown in the above-mentioned example is explained. The list table is displayed on the display terminal as an initial screen. If the name of a place and its easy guide sentence are displayed on a list table and an operator clicks the desired name of a place, the screen ID will be sent to a retrieving database, and a retrieving database will send the item of the record corresponding to the screen ID to a display terminal. Since local drawing information, the filming site dot data on local drawing, reference-direction information, and photography track information are included, based on these information, local drawing is displayed on the local drawing section display of a display, and also a point sign and a locus sign are displayed on the sent item by a pile.

[0028]If the point on the point sign which an operator wants to display, or a locus sign is clicked, Point ID is acquired, based on a domain name, it connects with the image database corresponding to the screen ID, an image file name, a dynamic image file name, etc. are transmitted, and an image database sends the data of the specified picture to a display terminal. A display terminal starts the received picture in a reference direction, and displays it on an image display region.

[0029]In panorama drawing, if an operator changes the direction of the direction instruction element of a point sign, the logging position of a picture will be changed and the picture of the direction will be displayed. In an animation, when an operator clicks the point on a locus, the moving image information of the predetermined time before and behind that is started, and it displays on an image display division as an animation. And when alteration data is registered, text information and sound data are changed according to change of a screen.

[0030]As explained above, in the method and device of this invention. While the image is displayed by pointing at the specific point and specific locus which were displayed on local drawing, In this kind in which only the image an operator is able to choose the direction of a look and the regeneration time of an animation by an operator's operation, and conventionally two-dimensional was acquired of image display means, It is effective in the ability to show a picture as three dimensions thru/or fourth dimension information with spatial and time breadth.

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[Translation done.]

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1]The explanatory view showing the topology of the terminal in an example, and data \*\*--SU

[Drawing 2]The hardware-constitutions figure of a display terminal

[Drawing 3]The figure showing the display screen of a display terminal

[Drawing 4]The hardware-constitutions figure of a retrieving database

[Drawing 5]The hardware-constitutions figure of an image database

[Drawing 6]The explanatory view showing data flow

[Drawing 7]The figure showing a relation with the partial information displayed as a panoramic image

[Drawing 8]The explanatory view showing an example of the input means of direction information

[Drawing 9]The figure showing the example of the moving track of an animation

[Drawing 10]The explanatory view showing the relation between a moving track and the regeneration time of an animation

[Drawing 11]The flow chart which shows the example of the display control of a panoramic image

[Drawing 12]The flow chart which shows the example of the display control of video

### [Description of Notations]

1 Display terminal

2 Retrieving database

3 Image database

10 CPU

11 Display

12 Memory

13 Keyboard

14 Mouse

15 CD-ROM

16 Loudspeaker

17 Network interface

18 HDD

20 Image display division

21 Area-map section display

22 Text information section display

23 Control

24 Control

40 Point sign

41 Direction instruction element

42 A nearby point

43 Locus sign

44 The point on a locus

15 Moving-image-reproduction time

46 End time

R1 Coordinates of a direction instruction element

R2 point coordinates

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[Translation done.]

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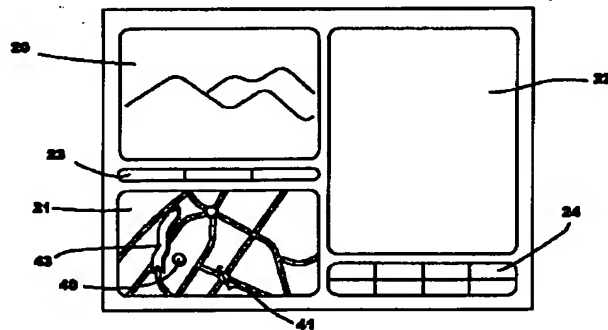
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## (54) 【発明の名称】 画像表示方法及び装置

## (57) 【要約】

【課題】 特定の地点ないし移動軌跡に対応するパノラマ画、動画などの画像情報の表示方法及び装置に関し、より臨場感に溢れ、操作者が位置、方角及び時間を統合的に制御可能にした表示手段を提供する。

【解決手段】 ディスプレイ画面上に表示された地域画面上に方向指示要素を備えた地点記号を表示し、当該地点の方向指定情報が入力されたときに、方向指示要素を指定方向に向けると共に、地域画面上の当該地点に対応する画像情報から指定方向の画像部分を切り出して表示する。また動画については、地域画面上に移動経路を示す軌跡記号を表示し、当該軌跡記号上の座標が入力されたときに、軌跡に沿って視点を移動させたときの景観の変化を示す動画情報から前記座標に対応させた部分時間で切り取られた動画情報を表示する。



## 【特許請求の範囲】

【請求項 1】 ディスプレイ画面上に表示された地域画面上に方向指示要素を備えた地点記号を表示し、当該地点の方向指定情報が入力されたときに、前記方向指示要素を指定方向に向けると共に、地域画面上の当該地点に対応する画像情報から前記指定方向の画像部分を切り出して表示することを特徴とする、画像の表示方法。

【請求項 2】 特定地点の画像情報を記録した画像ファイルと、画像表示区画と地域画表示区画とを備えた表示装置と、画像情報を前記画像表示区画に表示する画像表示手段と、域画情報を前記地域画表示区画に表示する地域画表示手段と、地域画情報の特定地点に関連付けられて表示される方向指示要素を備えた地点記号表示手段と、地域画表示区画上のポイント座標及び当該座標上の方向情報の取得手段と、取得したポイント座標が前記特定地点の座標に対応するときに当該特定地点に関連付けられた画像ファイルを選択するファイル選択手段と、取得した方向情報に対応する画像ファイル内の部分情報を画像表示手段に送出する表示情報出力手段とを備えた画像表示装置。

【請求項 3】 ディスプレイ画面上に表示された地域画面上に移動経路を示す軌跡記号を表示し、当該軌跡記号上の座標が入力されたときに、当該軌跡に沿って視点を移動させたときの景観の変化を示す動画情報から前記座標に対応させた開始時間と終了時間とで切取られた動画情報を表示することを特徴とする、画像の表示方法。

【請求項 4】 視点の移動を伴う動画情報を記録した動画ファイルと、画像表示区画と地域画表示区画とを備えた表示装置と、動画情報を前記画像表示区画に表示する画像表示手段と、地域画情報を前記地域画表示区画に表示する地域画表示手段と、地域画情報上の前記移動の経路に沿う軌跡を表示する軌跡表示手段と、地域画表示区画上のポイント座標の取得手段と、取得したポイント座標が前記軌跡上にあるときに当該軌跡に関連付けられた動画ファイルを選択するファイル選択手段と、取得したポイント座標の前記軌跡上の位置に対応する動画ファイル内の部分情報を画像表示手段に送出する表示情報出力手段とを備えた、画像表示装置。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】この発明は、地域の特定の地点ないし移動軌跡に対応する画像情報の表示方法及び装置に関するもので、例えば観光地の特定地点、ゴルフコース、スキーの滑降コースなどにおける全方位画像（パノラマ画）、移動に伴って変化する画像（動画）及び移動に伴って変化する全方位画像（パノラマ動画）などの画像をディスプレイ画面上に表示する方法及び装置に関するものである。

## 【0002】

【従来の技術】ディスプレイ画面上に地図や鳥瞰図など

の地域画を表示し、この地域画上の予め定められた特定地点に対応する位置に地点記号を重ねて表示して、その地点記号が例えばライトペンやマウスカースルなどでポイントされたときに、当該地点の景観を示す画像をディスプレイ画面上に表示する画像表示方法及び装置は公知である。

【0003】また、観光地の案内所や施設の管理室に設置されて対応する地域内に設けた複数のカメラから送られてくる信号を、ディスプレイ画面上に表示された地域図上のカメラの設置位置を示す地点記号をポイントすることによって選択して、当該選択されたカメラの画像をディスプレイ画面上に表示する方法及び装置も公知である。

## 【0004】

【発明が解決しようとする課題】上記のような従来の画像表示手段は、複数地点の景観情報などを操作者が自由に選択して表示させることができるという特徴がある。しかし従来のこの種手段は、地点毎に予め準備された二次元画像であって、時間軸を含めた四次元空間である現実の景観に比べて情報量が少なく、臨場感にも欠ける。また、操作者は地域画上の特定の地点を選択できるだけであり、選択された地点においてどのような画像を表示するかは、予め固定されてしまっている。

【0005】この発明は、より臨場感に溢れ、操作者が実空間の要素である位置、方角及び時間を統合的に制御可能にした表示手段を提供する。すなわち実際にその地点にいるときの状態により近いかたちで地域画上の特定の地点や移動経路上の景観その他の画像を表示可能にすることを課題としている。

## 【0006】

【課題を解決するための手段】請求項 1 に係る発明の画像の表示方法は、ディスプレイ画面上に表示された地域画面上に方向指示要素を備えた地点記号を表示し、当該地点の方向指定情報が入力されたときに、前記方向指示要素を指定方向に向けると共に、地域画面上の当該地点に対応する画像情報から前記指定方向の画像部分を切り出して表示するというものである。

【0007】また請求項 3 に係る発明の画像の表示方法は、ディスプレイ画面上に表示された地域画面上に移動経路を示す軌跡記号を表示し、当該軌跡記号上の座標が入力されたときに、当該軌跡に沿って視点を移動させたときの景観の変化を示す動画情報から前記座標に対応させた開始時間と終了時間とで切取られた動画情報を表示するというものである。

【0008】上記請求項 1 の方法を実現するための請求項 2 の発明に係る画像表示装置は、特定地点の画像情報を記録した画像ファイルと、画像表示区画と地域画表示区画とを備えた表示装置と、画像情報（パノラマ画、動画、静止画、CGグラフィックスなど）を前記画像表示区画に表示する画像表示手段と、地域画情報（地図、間

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取り図、鳥瞰図など)を前記地域画表示区画に表示する地域画表示手段と、地域画情報の特定地点に関連付けられて表示される方向指示要素を備えた地点記号表示手段と、地域画表示区画上のポイント座標及び当該座標上の方向情報の取得手段と、取得したポイント座標が前記特定地点の座標に対応するときに当該特定地点に関連付けられた画像ファイルを選択するファイル選択手段と、取得した方向情報に対応する画像ファイル内の部分情報を画像表示手段に送出する表示情報出力手段とを備えている。

【0009】また上記請求項3の方法を実現するための請求項4の発明に係る画像表示装置は、視点の移動を伴う動画情報を記録した動画ファイルと、画像表示区画と地域画表示区画とを備えた表示装置と、動画情報(パノラマ動画、動画、CGアニメーションなど)を前記画像表示区画に表示する画像表示手段と、地域画情報(地図、間取り図、鳥瞰図など)を前記地域画表示区画に表示する地域画表示手段と、地域画情報上の前記移動の経路に沿う軌跡を表示する軌跡表示手段と、地域画表示区画上のポイント座標の取得手段と、取得したポイント座標が前記軌跡上にあるときに当該軌跡に関連付けられた動画ファイルを選択するファイル選択手段と、取得したポイント座標の前記軌跡上の位置に対応する動画ファイル内の部分情報を画像表示手段に送出する表示情報出力手段とを備えている。

【0010】上記請求項1の方法と請求項3の方法を同時に行なうことにより、パノラマ動画の特定の方向の画像を経時的に表示できる。また上記方法及び装置は、スタンドアロンのコンピュータで実現することも、表示端末とサーバとをインターネット、LAN等でつないだシステムで実現することもできる。多くの情報を表示可能にしようとする画像データのデータ量が膨大になること及びデータの更新を考慮すると、画像データは複数のサーバに貯えて表示端末とネットワークで接続する構成がより好ましい。

#### 【0011】

【発明の実施の形態】以下、図面を参照して、この発明の実施の形態を説明する。図示実施例の装置は、表示端末1と、検索データベース(検索データのサーバ)2と、画像データベース(画像データのサーバ)3とで構成されている。表示端末1と2種類のデータベース2、3とは、インターネットを用いてネットワークを構成しており、画像データベース3及び表示端末1は複数存在している。

【0012】図2は、表示端末1のハードウェア構成の一例を示したもので、CPU10、ディスプレイ11、メモリ12、キーボード13、マウス14、CD-ROM15、スピーカ16、ネットワークインターフェイス17及びHDD18を備えており、HDD18にはネットワーク接続プログラム、ブラウザ、パノラマ画処理プ

ログラム、動画処理プログラムなどの処理プログラムが記録されている。ディスプレイ画面上の座標情報は、マウス14によって入力される。

【0013】表示端末1のディスプレイ画面は、図3に示すように、画像表示区画20、地域画表示区画21及びテキスト情報表示区画22に区画されており、情報の選択や表示の切替を行うためのコントロール23、24の表示領域を備えている。

【0014】ブラウザは、検索データベース2から受取った情報により画像データベース3から取得する地図、間取り図、鳥瞰図などの地域画を地域画表示区画21に表示し、画像撮影位置として指定された地域画表示区画上の位置に方向指示要素41を備えた地点記号40を表示する。また動画の撮影位置情報に対応して、動画軌跡情報に基づいた軌跡を地域画表示区画に表示する。更にブラウザは、画像データベース3から受取って後述する切出しプログラムによって切出されたパノラマ画、動画、静止画、CGグラフィックスなどの画像情報を画像表示区画20に表示し、テキスト情報をテキスト表示区画20に表示し、サウンドデータを再生する。

【0015】パノラマ画処理プログラムは、取得された地域画表示区画上のポイント座標が地点記号の表示位置に対応するときに、当該地点の地点IDを検索データベース2に送信する地点ID送信プログラムと、指定された画像ファイルから取得した方向情報に対応する部分画像を切出してブラウザへ送出する切出しプログラムとを含んでいる。

【0016】また動画処理プログラムは、取得されたポイント座標が表示された軌跡上にあるときに、当該軌跡の軌跡IDを検索データベース2に送信する送信プログラムと、取得したポイント座標の位置に対応する動画の再生区間を動画再生基準時間のデータを基にして切出してブラウザに送出する切出しプログラムとを含んでいる。

【0017】検索データベース2及び画像データベース3のハードウェア構成は、基本的には表示端末のものとほぼ同じであるので、図4及び図5に図2と同じ符号を付して説明を省略する。

【0018】検索データベース2のHDD18には、ネットワーク接続プログラム、テーブルデータの送信プログラム、テーブル更新プログラム、リストテーブル、検索テーブルなどが記録されている。検索テーブルの項目は、例えば画面ID、ネットワークドメイン名、画面タイトル名、地域画像情報、地域画表示区画に表示される複数の地点ないし軌跡の地点ID、各地点IDに対応するパノラマ画撮影位置情報、地点記号表示位置情報、方向指示器基準位置情報、動画撮影軌跡情報、動画再生基準時間などである。

【0019】更に検索データベースには、複数の地点IDのそれぞれに対応して、動画ファイル名、パノラマ画



像ファイル名、テキスト情報ファイル名、サウンドデータファイル名が登録されている。

【0020】検索データベース2は、初期情報としてリストテーブルを表示端末1に送り、表示端末1は、テキスト表示領域にリストテーブルを表示する。表示端末側でリストテーブル中の1レコードが選択されると、表示端末は当該レコードの画面IDを検索データベース2に送り、検索データベース2は選択されたレコードに記載されている項目情報を表示端末1に送信する。

【0021】複数の画像データベース3は、それぞれが検索データベース2に登録されたネットワークドメイン名を所持しており、検索テーブルに登録されている名前の動画ファイル、パノラマ画像ファイル、テキスト情報ファイル、サウンドデータファイルが登録されている。また画像データベース3は、ネットワーク接続プログラムと画像情報送信プログラムの他に、更新情報送信プログラムを備え、画像データベース3に新しい画像が追加されたり変更されたり削除されたりしたときは、それに対応する項目データを検索データベース2に送り、検索データベース2の更新プログラムは、検索テーブルの内容を更新する。

【0022】検索データベース2のリストテーブル及び検索テーブルは、CD-ROMで提供することも可能であり、この場合はCD-ROMドライブ15で表示端末に読み込まれる。またパノラマ画像や動画再生時間の切出しは、画像データ側で行なうようにすることもできる。

【0023】図7は表示端末が備えている方向情報取得手段を概念的に示したものであり、図8はパノラマ画像の部分画像切出手段を概念的に示したものである。地域図上の特定地点を表示する地点記号40は、方向指示要素41を備えている。この方向指示要素は、当該地点記号40の近傍の点42の座標が入力されたとき乃至当該地点記号がドラッグされたときに地点記号の表示座標と点42の座標から方向を演算して、その向きを変える。表示端末は、取得した方向指示情報から、現在表示しているパノラマ画像データから指定された方向にある所定領域の部分情報を切出、補正して画像表示区画20に表示する。

【0024】図8及び9は、地域画表示区画に表示された軌跡記号43と、動画表示時間との関係を示す概念図である。軌跡上の点44の座標が入力されると、その軌跡上の点が動画の再生期間中のどの時間位置であるかが算出され、その時間位置の前後の時間幅で、動画再生時間45と終了時間46とが設定される。そして設定された時間内の画像情報を画像表示区画20に表示する。

【0025】図11はパノラマ画表示時における処理の流れを示したフローチャートである。操作者が表示ポイントを指定していないときは、表示状態を保持する。ポイントを指定すると、位置記号の表示座標R1とポイン

ト座標R2から角度を算出し、表示する画像を更新する。そして表示する画像の方向とテキストの表示内容及びサウンドデータとの関係を記録した方向情報ファイルを参照し、必要であれば表示データの更新を行う。

【0026】図12は動画を表示するときの処理を示すフローチャートである。操作者が軌跡記号をポイントしていないときは、動画が再生中であれば、その再生を継続し、再生していなければ、表示状態を保持する。動画が再生しているときは、その再生時間と表示するテキストデータ及びサウンドデータとの関係を記載した軌跡情報ファイルを参照して、必要な表示やサウンドの変更処理を行う。操作者が軌跡記号をポイントしたときは、再生時間を変更し、軌跡情報ファイルを見てテキストデータ及びサウンドデータの更新を行う。

【0027】次に上記実施例で示した装置の全体的な動作を説明する。表示端末には初期画面としてリストテーブルが表示されている。リストテーブルには例えば地名とその簡単な案内文が表示され、操作者が所望の地名をクリックすると、その画面IDが検索データベースに送られ、検索データベースはその画面IDに対応するレコードの項目を表示端末に送る。送られた項目には、地域画情報、地域画上の撮影地点情報、基準方向情報、撮影軌跡情報が含まれているから、これらの情報を基に、ディスプレイの地域画表示区画に地域画を表示し、更に地点記号や軌跡記号を重ねて表示する。

【0028】操作者が表示させたい地点記号や軌跡記号上の点をクリックすると、地点IDが取得され、ドメイン名を基にその画面IDに対応する画像データベースに接続して画像ファイル名、動画ファイル名などが送信され、画像データベースは指定された画像のデータを表示端末に送る。表示端末は、受取った画像を基準方向で切出して画像表示領域に表示する。

【0029】パノラマ画においては、操作者が地点記号の方向指示要素の方向を変えると、画像の切出し位置が変更されて、その方向の画像が表示される。また動画においては、操作者が軌跡上の地点をクリックしたときに、その前後の所定時間の動画情報を切出して画像表示区画に動画として表示する。そして変更データが登録されているときには、画面の変化に応じてテキスト情報やサウンドデータが変更される。

【0030】以上説明したように、この発明の方法及び装置では、地域画上に表示された特定地点や特定軌跡をポイントすることによって、その映像が表示されるとともに、操作者の操作によって視線の方向や動画の再生時間を操作者が選択することが可能であり、従来は二次元的な映像しか得られなかったこの種の画像表示手段において、空間的及び時間的な広がりのある三次元ないし四次元情報として画像を提示することができるという効果がある。

【図面の簡単な説明】

【図1】実施例における端末とデータベースの接続形態を示す説明図

【図2】表示端末のハードウェア構成図

【図3】表示端末のディスプレイ画面を示す図

【図4】検索データベースのハードウェア構成図

【図5】画像データベースのハードウェア構成図

【図6】データの流れを示す説明図

【図7】パノラマ画像と表示する部分情報との関係を示す図

【図8】方向情報の入力手段の一例を示す説明図

【図9】動画の移動軌跡の例を示す図

【図10】移動軌跡と動画の再生時間との関係を示す説明図

【図11】パノラマ画像の表示制御の例を示すフローチャート

【図12】動画の表示制御の例を示すフローチャート

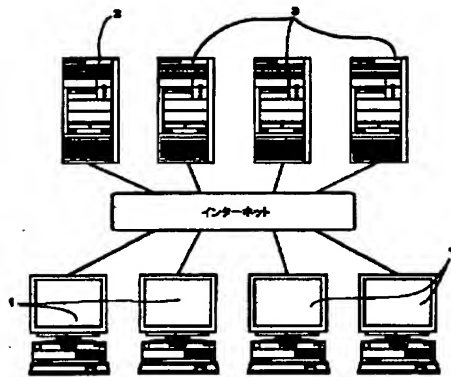
【符号の説明】

- 1 表示端末
- 2 検索データベース
- 3 画像データベース
- 10 CPU
- 11 ディスプレイ

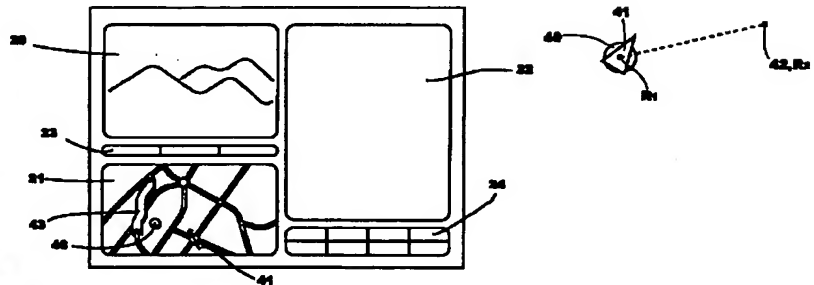
- \* 12 メモリ
- 13 キーボード
- 14 マウス
- 15 CD-ROM
- 16 スピーカ
- 17 ネットワークインタフェース
- 18 HDD
- 20 画像表示区画
- 21 地域図表示区画
- 10 22 テキスト情報表示区画
- 23 コントロール
- 24 コントロール
- 40 地点記号
- 41 方向指示要素
- 42 近傍の点
- 43 軌跡記号
- 44 軌跡上の点
- 15 動画再生時間
- 46 終了時間
- 20 R1 方向指示要素の座標
- R2 ポイント座標

\*

【図1】

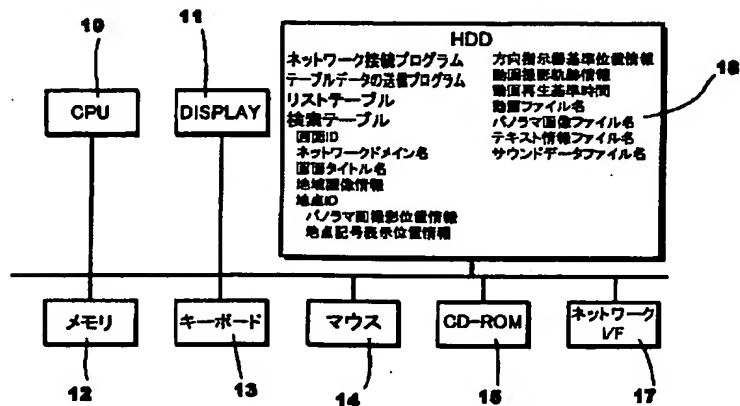


【図3】

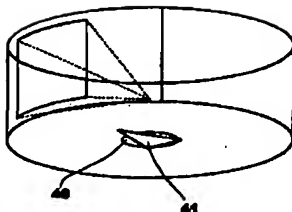


【図8】

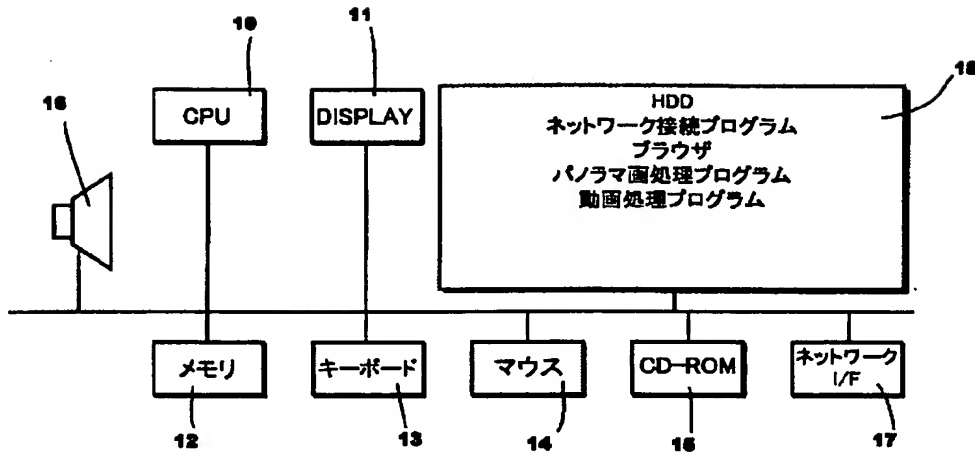
【図4】



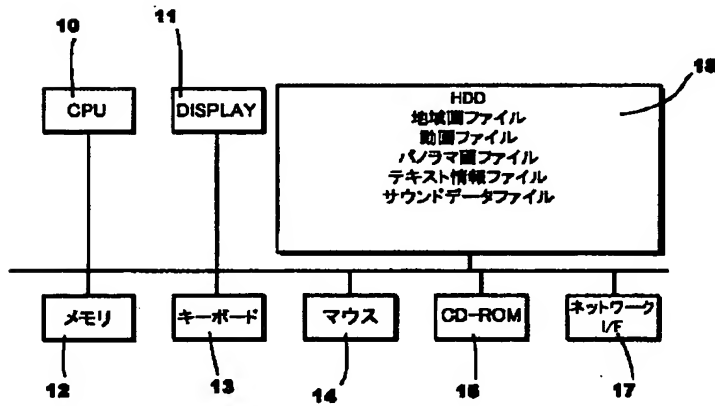
【図7】



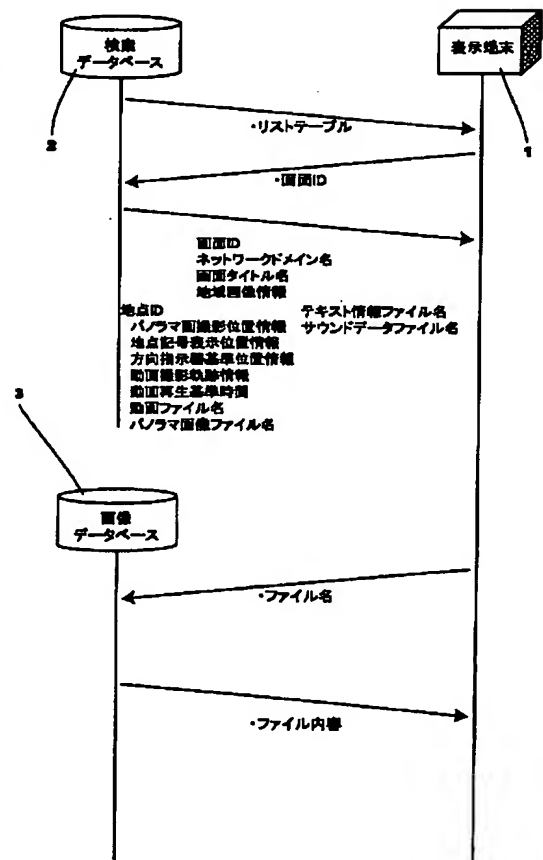
【図2】



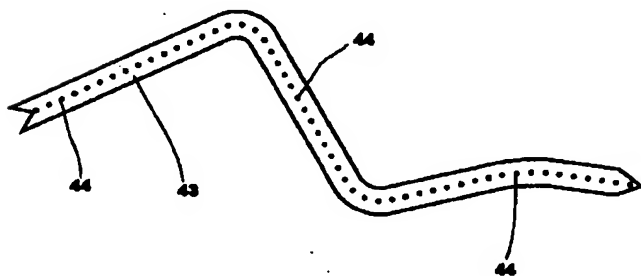
【図5】



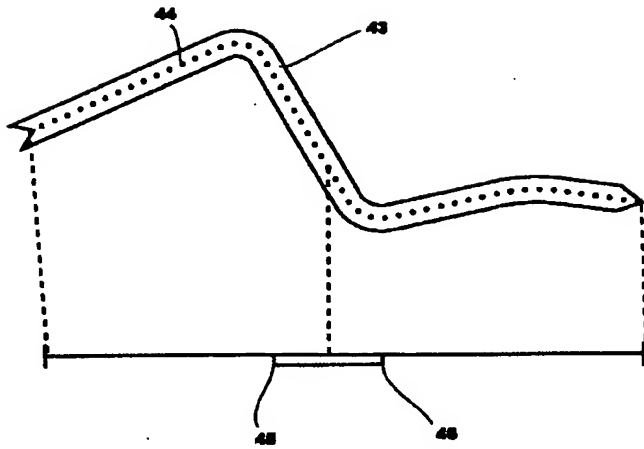
【図6】



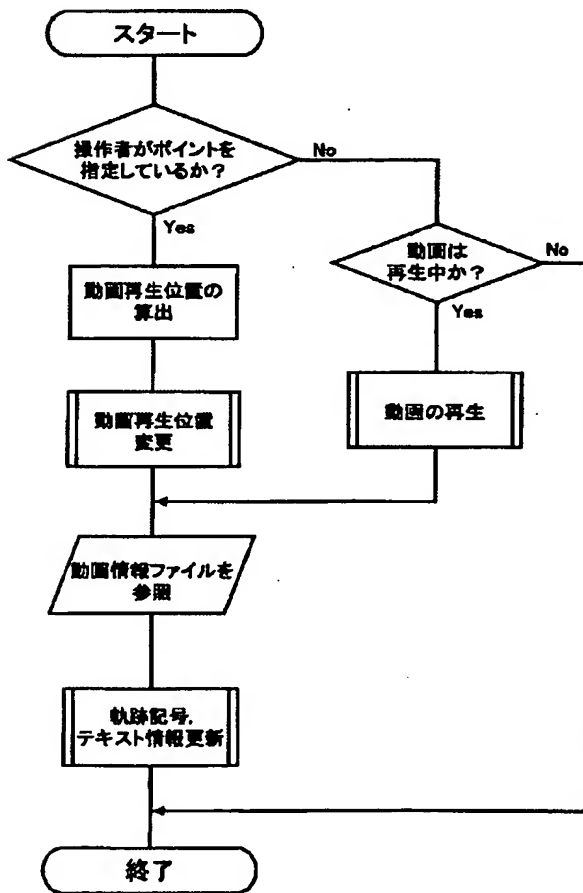
【図9】



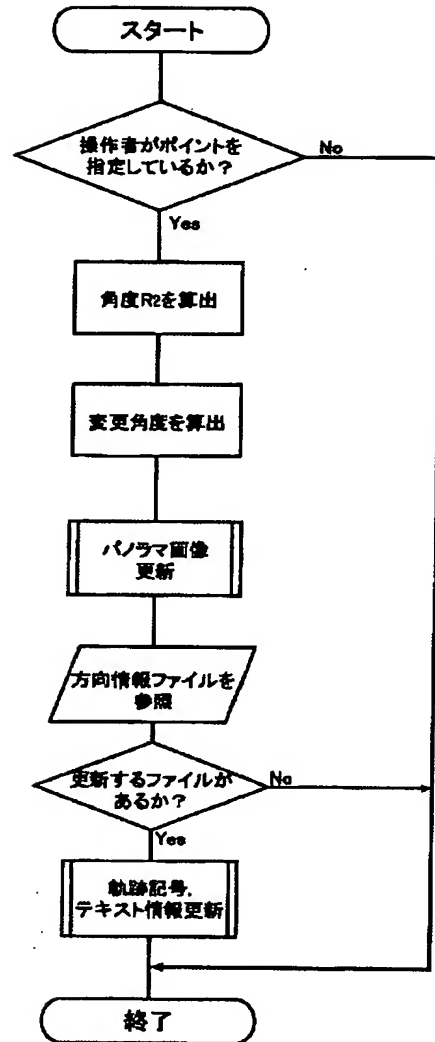
【図10】



【図12】



【図11】



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